

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
14 July 2005 (14.07.2005)

PCT

(10) International Publication Number
WO 2005/063804 A1

(51) International Patent Classification⁷: **C07K 14/445**, C12N 15/31, C07K 16/20, A61K 39/00, 38/00

(DK). STAALSØ, Trine [DK/DK]; Borups Allé 217C, 3. tv., DK-2400 Copenhagen NV (DK). THEANDER, Thor, G. [DK/DK]; Rosenvangen 7, DK-2635 Ishøj (DK).

(21) International Application Number:

PCT/DK2004/000922

(74) Agent: PLOUGMANN & VINGTOFT A/S; Sundkrogsdage 9, P.O. Box 831, DK-2100 Copenhagen Ø (DK).

(22) International Filing Date:

28 December 2004 (28.12.2004)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

PA 2003 01954 30 December 2003 (30.12.2003) DK

(71) Applicant (for all designated States except US): KØBENHAVNS UNIVERSITET PANUM [DK/DK]; Blegdamsvej 3 B, DK-2200 Copenhagen N (DK).

(72) Inventors; and

(75) Inventors/Applicants (for US only): JENSEN, Anja, T., R. [DK/DK]; Aggersvoldvej 13, 1th, DK-2700 Brønshøj (DK). HVIID, Lars [DK/DK]; Kretavej 31, DK-2300 Copenhagen S (DK). JØRGENSEN, Louise [DK/DK]; Høsterkøbvej 40, DK-2970 Hørsholm (DK). LAVSTEN, Thomas [DK/DK]; Silkeborggade 22, 3th, DK-2100 Copenhagen Ø (DK). MAGISTRADO, Pamela [PH/DK]; Forhåbningsholm Allé 41A, 3tv, DK-1904 Frederiksberg C (DK). NIELSEN, Morten, A. [DK/DK]; Ourøgade 39, 2tv, DK-2100 Copenhagen Ø (DK). SALANTI, Ali [DK/DK]; Krusågade 22, 2. tv., DK-1719 Copenhagen V

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: COMPOUNDS USEFUL IN THE DIAGNOSIS AND TREATMENT OF MALARIA

(57) Abstract: The present invention relates to nucleic acid molecules related to the *PFD1235w/MAL7P1.1*, *PF11_0008*, and *PF13_0003* gene families as well as amino acid sequences encoded by such nucleic acid molecules with respect to their role in mediating adhesion of infected red blood cells to endothelial cells, which is characteristic for the pathogenesis of severe malaria (SM). Accordingly, the invention provides pharmaceutical compositions and vaccines hereunder nucleotide-based vaccines comprising compounds that are related to VAR4, VAR5, and/or VAR6 polypeptides and *PFD1235w/MAL7P1.1 PF11_0008*, and/or *PF13_0003* nucleic acid molecules. The invention further relates to the use of these compounds as medicaments and for the manufacture of compositions, such as immunogenic compositions. In addition, the invention relates to methods of treatment and prevention of severe malaria wherein these methods are based on the nucleic acid molecules and polypeptides of the invention. As these compounds can also be used as biotechnological tools the invention provides *in vitro* diagnostic methods and kits comprising reagents and IgGs/antibodies designated to the use in such methods. The invention also relates to methods of identifying agents capable of modulating the VAR4, VAR5, and/or VAR6 dependent adhesion to endothelial cells and agent capable of interacting with VAR4, VAR5, and/or VAR6. Finally, a method for identifying polypeptides, which will induce a specific IgG/antibody response upon administration to a subject is provided by the invention.

WO 2005/063804 A1